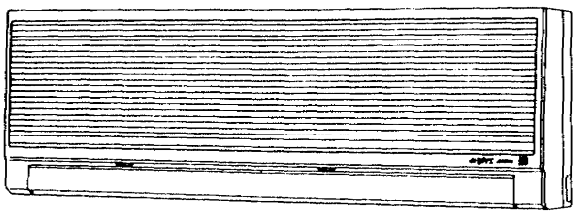
SERVICE MANUAL (Expanded Information)

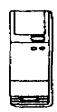
KS1822 ── C1822
└ CL1822

SPLIT SYSTEM AIR CONDITIONER

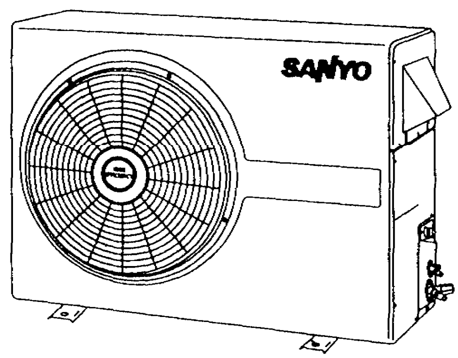
Indoor Unit



KS1822



Outdoor Unit



C1822 / CL1822

8526481018600

REFERENCE NO. WM-700712
(W)

SERVICE MANUAL

KS1822 — **C1822**
└— **CL1822**

(Expanded Information)

IMPORTANT!
Please Read Before Starting

This air conditioning system meets strict safety and operating standards. As the installer or service person, it is an important part of your job to install or service the system so it operates safely and efficiently.

For safe installation and trouble-free operation, you must:

- Carefully read this instruction booklet before beginning
- Follow each installation or repair step exactly as shown
- Observe all local, state, and national electrical codes
- Pay close attention to all warning and caution notices given in this manual

WARNING: This symbol refers to a hazard or unsafe practice which can result in severe personal injury or death.

CAUTION: This symbol refers to a hazard or unsafe practice which can result in personal injury or product or property damage.

If Necessary, Get Help

These instructions are all you need for most installation sites and maintenance conditions. If you require help for a special problem, contact our sales/service outlet or your certified dealer for additional instructions.

In Case of Improper Installation

The manufacturer shall in no way be responsible for improper installation or maintenance service, including failure to follow the instructions in this document.

SPECIAL PRECAUTIONS

When Wiring

ELECTRICAL SHOCK CAN CAUSE SEVERE PERSONAL INJURY OR DEATH. ONLY A QUALIFIED, EXPERIENCED ELECTRICIAN SHOULD ATTEMPT TO WIRE THIS SYSTEM.

- Do not supply power to the unit until all wiring and tubing are completed or reconnected and checked.
- Highly dangerous electrical voltages are used in this system. Carefully refer to the wiring diagram and these instructions when wiring. Improper connections and inadequate grounding can cause **accidental injury or death.**
- **Ground the unit** following local electrical codes.
- Connect all wiring tightly. Loose wiring may cause overheating at connection points and a possible fire hazard.

When Transporting

Be careful when picking up and moving the indoor and outdoor units. Get a partner to help, and bend your knees when lifting to reduce strain on your back. Sharp edges or thin aluminum fins on the air conditioner can cut your fingers.

When Installing...

...In a Ceiling or Wall
Make sure the ceiling/wall is strong enough to hold the unit's weight. It may be necessary to construct a strong wood or metal frame to provide added support.

...In a Room
Properly insulate any tubing run inside a room to prevent "sweating" that can cause dripping and water damage to walls and floors.

...In Moist or Uneven Locations
Use a raised concrete pad or concrete blocks to provide a solid, level foundation for the outdoor unit. This prevents water damage and abnormal vibration.

...In an Area with High Winds
Securely anchor the outdoor unit down with bolts and a metal frame. Provide a suitable air baffle.

...In a Snowy Area (for Heat Pump-type Systems)
Install the outdoor unit on a raised platform that is higher than drifting snow. Provide snow vents.

When Connecting Refrigerant Tubing

- Keep all tubing runs as short as possible.
- Use the flare method for connecting tubing.
- Apply refrigerant lubricant to the matching surfaces of the flare and union tubes before connecting them, then tighten the nut with a torque wrench for a leak-free connection.
- Check carefully for leaks before starting the test run.

NOTE:
Depending on the system type, liquid and gas lines may be either narrow or wide. Therefore, to avoid confusion the refrigerant tubing for your particular model is specified as either "narrow" or "wide" rather than as "liquid" or "gas."

When Servicing

- Turn the power OFF at the main power box (mains) before opening the unit to check or repair electrical parts and wiring.
- Keep your fingers and clothing away from any moving parts.
- Clean up the site after you finish, remembering to check that no metal scraps or bits of wiring have been left inside the unit being serviced.

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1. SPECIFICATIONS

1-1 Unit Specifications

Model No.		Indoor Unit	KS1822	
		Outdoor Unit	C1822 / CL1822	
Performance			Cooling	
	Capacity	BTU/h	17,000 / 16,500	
		kW	4.98 / 4.84	
	Air circulation (High)	cu. ft./min.	440 / 420	
	Moisture removal (High)	pints/h	5.3 / 5.2	
Electrical Rating	Phase, Frequency	Hz	Single, 60	
	Voltage rating	V	230 / 208	
	Available voltage range	V	187 to 253	
	Running amperes	A	7.6 / 8.2	
	Power input	W	1,720 / 1,670	
	Power factor	%	98 / 98	
	Starting amperes	A	41.4	
	S. E. E. R.	BTU/Wh	10.4 / 10.4	
Features	Controls		Microprocessor	
	Control unit		Wireless remote control unit	
	Temperature control		IC thermostat	
	Timer		ON/OFF, 24-hours & Program	
	Fan speeds	Indoor / Outdoor	3 and Auto / 1	
	Air deflector	Horizontal / Vertical	Manual / Automatic	
	Air filter		Washable, easy access	
	Compressor		Rotary	
	Refrigerant amount charged at shipment	lbs. (kg)	R22, 4.45 (2.02)	
	Refrigerant control		Capillary tube	
	Refrigerant tubing connections		Flare type	
	Operation sound	In-Hi/Me/Lo dB-A	47 / 44 / 40	
		Out-Hi dB-A	55	
	Max. allowable tubing length at shipment	ft. (m)	33 (10)	
	Limit of tubing length	ft. (m)	65 (20)	
	Limit of elevation difference between the 2 units	ft. (m)	Outdoor unit is higher than indoor unit. 23 (7) Outdoor unit is lower than indoor unit. 23 (7)	
	Refrigerant tube o.d.	Narrow tube in. (mm)	1/4 (6.35)	
		Wide tube in. (mm)	5/8 (15.88)	
	Refrigerant tube kit		Optional	
	Accessories		Hanging wall bracket	
Dimensions & Weight			Indoor unit	Outdoor unit
	Height	in. (mm)	14-3/16 (360)	24-13/16 (630)
	Width	in. (mm)	38-31/32 (990)	32-11/16 (830)
	Depth	in. (mm)	7-25/32 (198)	12-13/32 (315)
	Net weight	lbs. (kg)	30 (13.5)	121 (55)
	Shipping volume	cu. ft. (cu. m)	4.8 (0.136)	10.4 (0.294)
	Shipping weight	lbs. (kg)	37.4 (17)	130 (59)

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

Remarks: Rating conditions are: Outside air temperature 95°F DB/75°F WB
Indoor unit entering air temperature 80°F DB/67°F WB

1-2 Major Component Specifications

(1) Indoor and Outdoor Units

(a) KS1822 (Indoor unit)

Unit Model No.				**KS1822**
Remote Control Unit				RCS-KS2412W
Controller PCB				POW-KS1812B
	Control circuit fuse			250V, 3A
Fan	Type			Cross-flow
	Number ... Dia. and length		in. (mm)	1 ... O.D. 4 (100), L 29-9/32 (755)
Fan Motor	Model ... Number			UF4T-31A6P ... 1
	No. of pole ... rpm (230V, High)			4 ... 1,590
	Nominal output		W(H.P.)	30 (1/25)
	Coil resistance (Ambient temp. 68°F)		Ω	WHT – BRN: 102.6 WHT – VLT: 37.1 VLT – YEL: 30.9 YEL – PNK: 69.3
	Safety devices	Type		Internal
		Operating temp.	Open °F	248 ± 9
			Close °F	171 ± 27
	Run capacitor		μF	1.5
			VAC	440
Louver Motor	Model			M2EA24ZA01
	Rating			208 to 230V, 60Hz
	No. of pole ... rpm.			8 ... 3
	Output		W	2.5
	Coil resistance (at 68°F)		kΩ	16.45 ± 15%
Heat Exch.	Coil			Aluminum plate fin / Copper tube
	Rows ... Fins per inch			2 ... 14.1
	Face area		$ft.^2$ (m^2)	2.08 (0.19)

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

(b) C1822 (Outdoor unit)

Unit Model No.					C1822	
Fuse					AC 250V, 3A	
Compressor	Type				Rotary (hermetic)	
	Model … Number				C-2R130H6P … 1	
	No. of cyl. … rpm				1 … 3,500	
	Nominal output			W (H.P.)	1,300 (1-3/4)	
	Compressor lubricant			cc	800	
	Coil resistance (Ambient temp. 77°F)			Ω	C – R: 1.19 C – S: 2.47	
	Safety devices	Type			Internal	External
		Overload relay models			—	—
		Operating temp.	Open	°F	311 ± 9	—
			Close	°F	188 ± 20	—
		Operating amp. (Ambient temp. 77°F)			—	—
	Run capacitor			μF	30	
				VAC	400	
	Crank case heater				—	
Fan	Type				Propeller	
	Number … Dia.			in. (mm)	1 … 15-3/4 (400)	
Fan Motor	Model				SFG6S-61B6P	
	No. of pole … rpm (230V, High)				6 … 1,030	
	Nominal output			W (H.P.)	60 (1/12)	
	Coil resistance (Ambient temp. 68°F)			Ω	WHT – BRN: 88.2 WHT – YEL: 116.3 WHT – PNK: 116.4	
	Safety devices	Type			Internal	
		Operating temp.	Open	°F	266 ± 14	
			Close	°F	174 ± 27	
	Run capacitor			μF	2.5	
				VAC	440	
Heat Exch.	Coil				Aluminum plate fin / Copper tube	
	Rows … fins per inch				2 … 15.9	
	Face area			$ft.^2$ (m^2)	5.57 (0.51)	
External Finish					Acrylic baked-on enamel finish	

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

(c) CL1822 (Outdoor unit)

Section	Item			Unit	CL1822	
Unit Model No.					CL1822	
Controller PC3					POW-183CL	
	Control circuit fuse				AC 250V, 5A	
Compressor	Type				Rotary (hermetic)	
	Model ... Number				C-2R130H6P ... 1	
	No. of cyl. ... rpm				1 ... 3,500	
	Nominal output			W (H.P.)	1,300 (1-3/4)	
	Compressor lubricant			cc	800	
	Coil resistance (Ambient temp. 77°F)			Ω	C – R: 1.19 C – S: 2.47	
	Safety devices	Type			Internal	External
		Overload relay models			—	—
		Operating temp.	Open	°F	311 ± 9	—
			Close	°F	188 ± 20	—
		Operating amp. (Ambient temp. 77°F)			—	—
	Run capacitor			μF	30	
				VAC	400	
	Crank case heater				230V, 30W	
Fan	Type				Propeller	
	Number ... Dia.			in. (mm)	1 ... 15-3/4 (400)	
Fan Motor	Model				SFG6S-61B6P	
	No. of pole ... rpm (230V, High)				6 ... 1,030	
	Nominal output			W (H.P.)	60 (1/12)	
	Coil resistance (Ambient temp. 68°F)			Ω	WHT – BRN: 88.2 WHT – YEL: 116.3 WHT – PNK: 116.4	
	Safety devices	Type			Internal	
		Operating temp.	Open	°F	266 ± 14	
			Close	°F	174 ± 27	
	Run capacitor			μF	2.5	
				VAC	440	
Heat Exch.	Coil				Aluminum plate fin / Copper tube	
	Rows ... fins per inch				2 ... 15.9	
	Face area			$ft.^2$ (m^2)	5.57 (0.51)	
External Finish					Acrylic baked-on enamel finish	

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

1-3 Other Component Specifications

(1) Indoor Unit

Transformer		ATR-H122U
Rated	Primary	AC 220V, 60Hz
	Secondary	10V, 1.2A
	Capacity	12VA
Coil resistance	Ω (at 77°F)	Primary (WHT – WHT): 146 ± 15% Secondary (BRN – BRN): 0.5 ± 15%
Thermal cut-off temp.		259°F, 2A 250V

Relay		DFU12D1-F(M)
Coil rating		DC 12V
Coil resistance	Ω (at 68°F)	160 ± 10%
Contact rating		AC 250V, 20A

Thermistor (coil sensor)		PBC-41E-S4			
Resistance	kΩ	14°F	23.7 ± 5%	77°F	5.3 ± 5%
		32°F	15.0 ± 5%	86°F	4.4 ± 5%
		50°F	9.7 ± 5%	104°F	3.1 ± 5%
		68°F	6.5 ± 5%		

Thermistor (room sensor)		SDT-500B6-2			
Resistance	kΩ	50°F	10.3 ± 4%	86°F	4.0 ± 4%
		59°F	8.0 ± 4%	104°F	2.6 ± 4%
		68°F	6.3 ± 4%	122°F	1.8 ± 4%
		77°F	5.0 ± 4%		

(2) Outdoor Unit

C1822

Thermostat			MQT5S 27YZ
Operating temp.	°F	ON	80 + 0, −5
		OFF	74 + 0, −5

CL1822

Transformer		ATR-J122U
Rated	Primary	AC 220V, 60Hz
	Secondary	19V, 0.63A
	Capacity	12VA
Coil resistance	Ω (at 77°F)	Primary (WHT – WHT): 147 ± 10%
		Secondary (BRN – BRN): 1.3 ± 10%
Thermal cut-off temp.		259°F, 2A 250V

CL1822

Electro-Magnetic Contactor		CLK-16E3-21
Coil rating		AC 240V, 60Hz
Coil resistance	kΩ (at 77°F)	2.5 ± 15%
Contact rating (Main)		AC 240V, 18A
(Auxiliary)		AC 240V, 3A

CL1822

Relay		MY2F-T1-USTS
Coil rating		DC 24V
Coil resistance	Ω (at 77°F)	650 ± 15%
Contact rating		AC 240V, 5A

CL1822

Thermistor (Air and coil sensor)		PBC-41E-S8, PBC-41E-S15			
Resistance	kΩ	14°F	23.7 ± 5%	77°F	5.3 ± 5%
		32°F	15.0 ± 5%	86°F	4.4 ± 5%
		50°F	9.7 ± 5%	104°F	3.1 ± 5%
		68°F	6.5 ± 5%		

CL1822

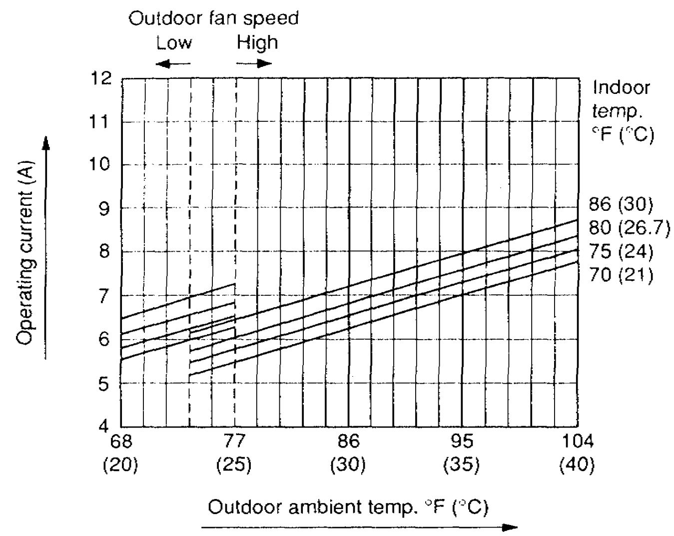
SSR (solid state relay)		G3L-205TL-TS1
Input		
	Rating voltage	DC 12V
	Control voltage range	DC 0 to 6.4V
Load voltage range		AC 75 to 264V, 60Hz

2. PERFORMANCE CHARTS

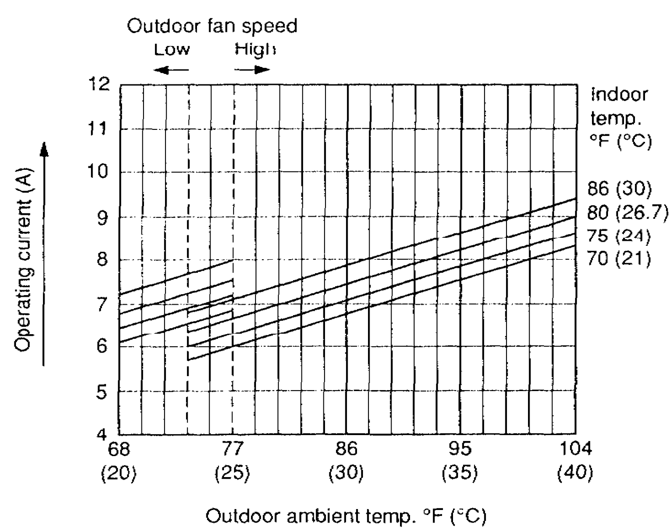
2-1 Operating Current

Operating current characteristics versus outdoor ambient temperature and indoor temperature
(Indoor relative humidity: 50%, Indoor fan speed: High)

230V



208V

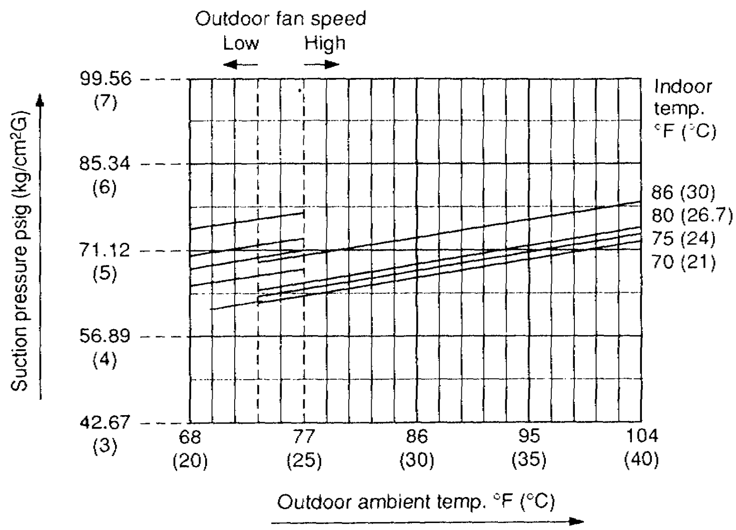


2-2 Low Pressure

■ KS1822 / C1822

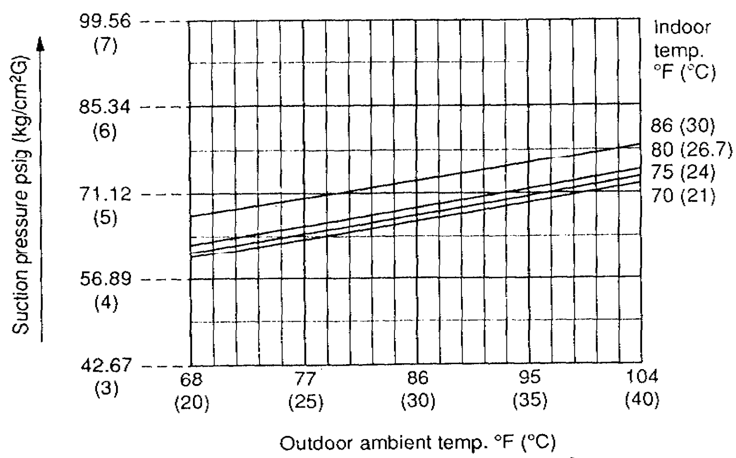
● Low Pressure

Low pressure characteristics versus outdoor ambient temperature and indoor temperature
(Indoor relative humidity: 50%, Indoor fan speed: High)



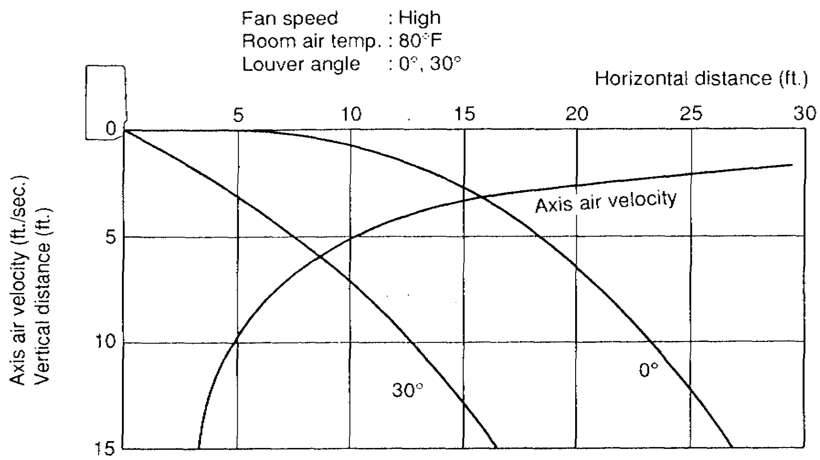
● Low Pressure

Low pressure characteristics versus outdoor ambient temperature and indoor temperature
(Indoor relative humidity: 50%, Indoor fan speed: High)



3. AIR THROW DISTANCE CHART

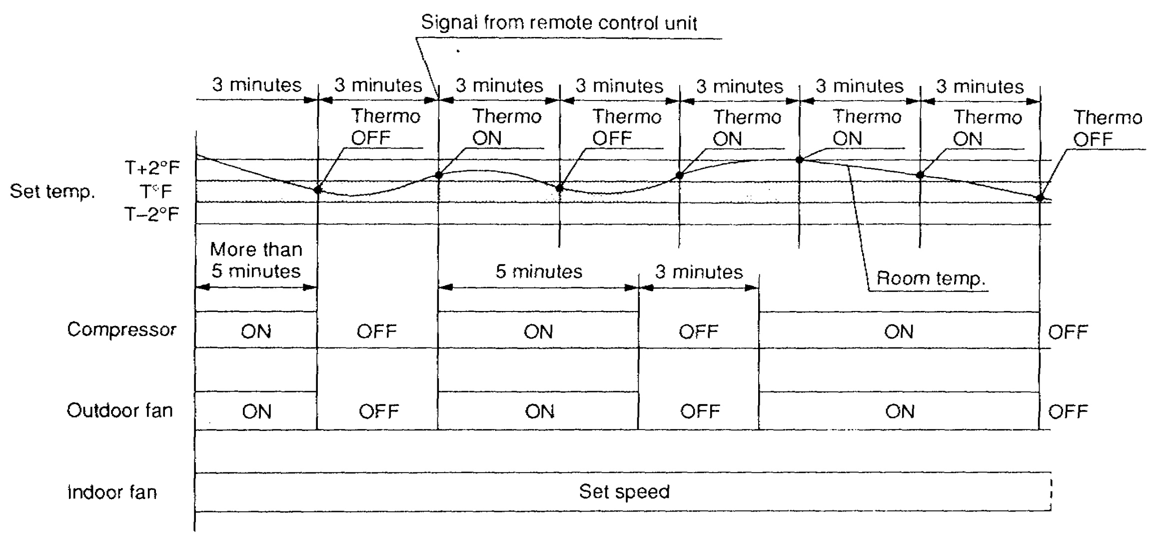
Model: KS1822



4. FUNCTION

4-1 Room Temperature Control

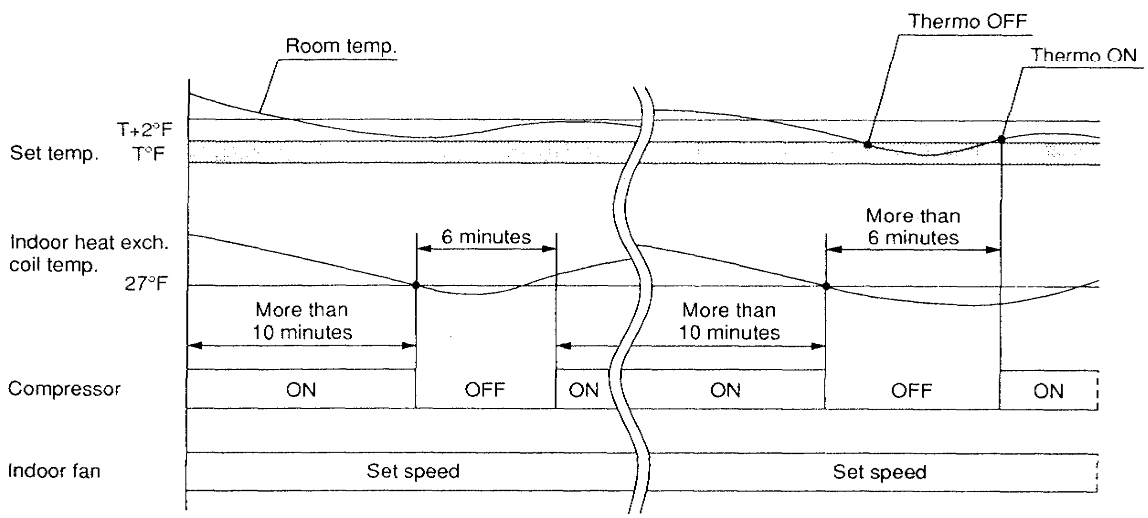
- Room temperature control is obtained by cycling the compressor ON and OFF under control of the room temperature sensor in the remote control unit.
- The room temperature (and other information) is transmitted every 3 minutes by the remote control unit to the controller in the indoor unit.



- The control circuit will not attempt to turn the compressor ON until the compressor has been OFF for at least 3 minutes. To protect the compressor from stalling out when trying to start against the high side refrigerant pressure, the control circuit has a built-in automatic time delay to allow the internal pressure to equalize.
- As a protective measure, the control circuit switches the compressor OFF after 5 minutes or more of compressor operation.
- Thermo ON : When the room temperature is above T + 2°F (T°F is set temperature).
  Compressor → ON
- Thermo OFF : When the room temperature is equal to or below set temperature T°F.
  Compressor → OFF

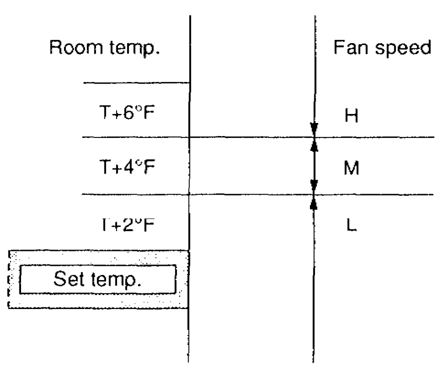
4-2 Freeze Prevention

- This function prevents freezing of the indoor heat exchange coil.
- When the compressor has been running for 10 minutes or more and the temperature of the indoor heat exchange coil falls below 27°F, the control circuit stops the compressor for at least 6 minutes.



4-3 Fan Speed Auto (Indoor Fan)

- The fan speed does not change within 1 minute.
- The number shows temperature for REMOCON sensor.

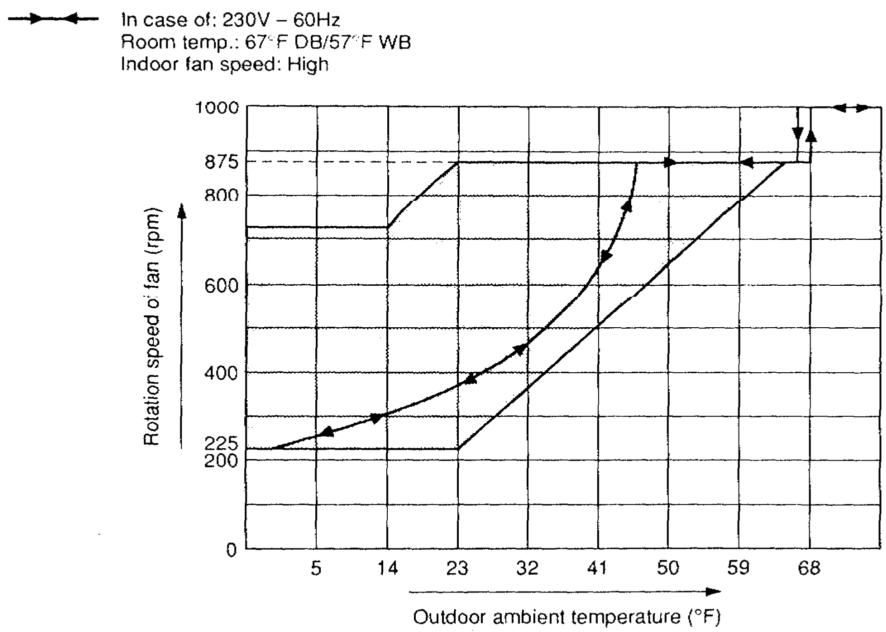


4-4 Outdoor Fan Speed Control (C1822)

- In low temperature areas, the outdoor fan goes automatically to LOW to prevent freezing.
- When the outdoor air temperature falls below 74°F, the outdoor fan is set to LOW.
  When the outdoor air temperature rises to 80°F, the outdoor fan is set to HIGH.

4-5 Outdoor Fan Speed Control (CL1822)

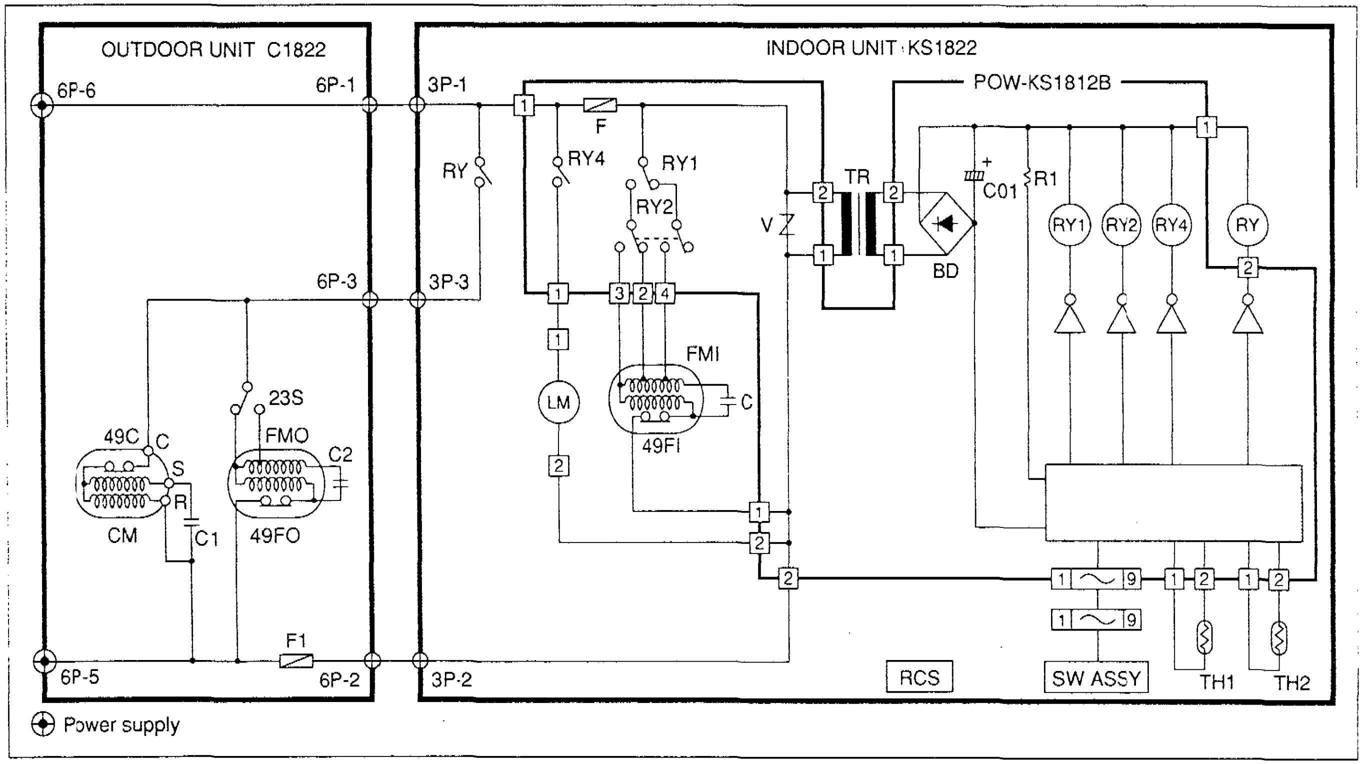
- When the outdoor air temperature falls below 66°F, the outdoor fan speed switches from HIGH to relative adjustment.
- The speed of fan rotation follows an oblique line under the outdoor and indoor air temperature conditions as shown in the diagram below.



5. ELECTRICAL DATA

● Schematic Diagram

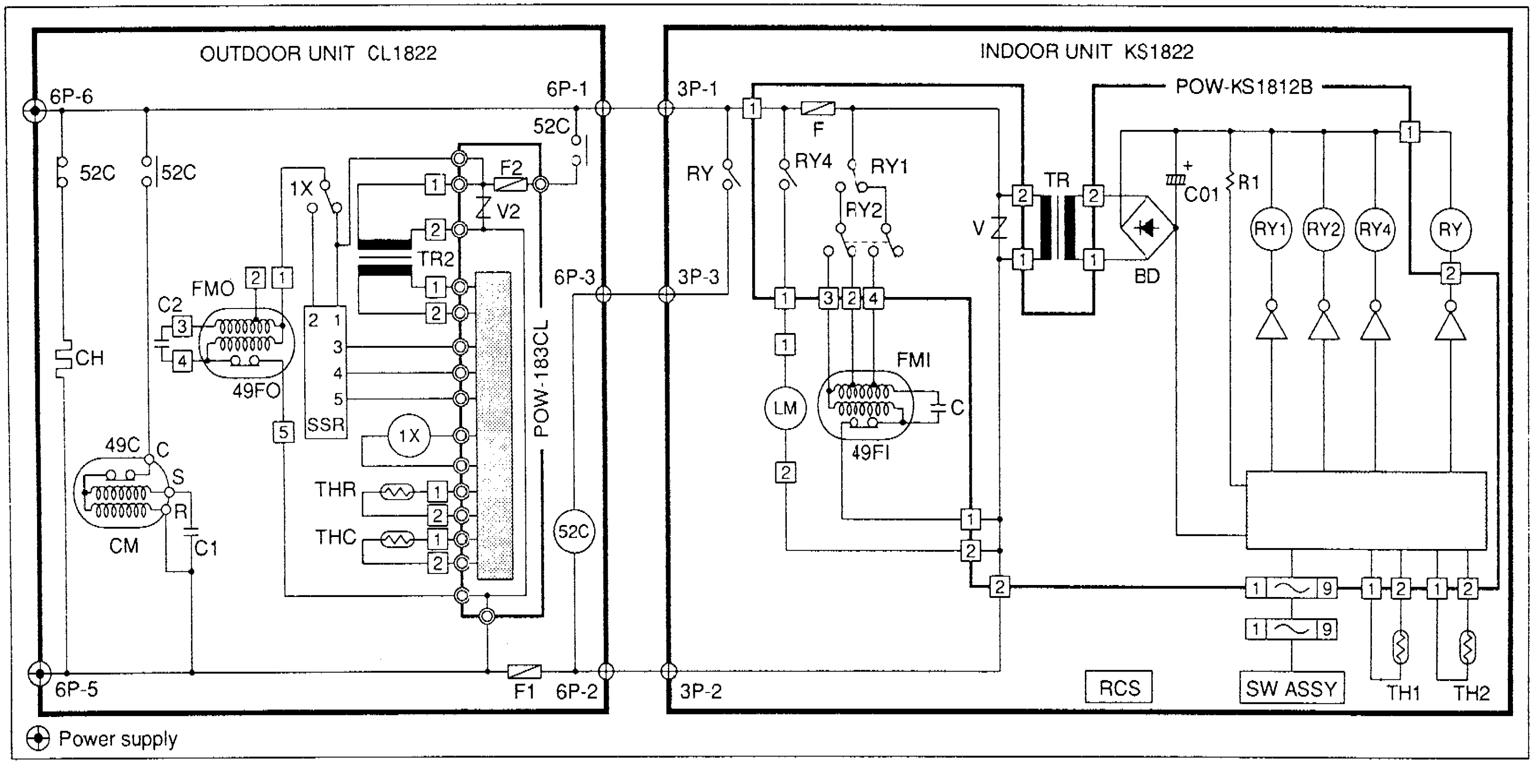
KS1822 / C1822



Symbol	Description	Symbol	Description
OUTDOOR UNIT		TR	TRANSFORMER
CM	COMPRESSOR MOTOR	RY	POWER RELAY
49C	COMPRESSOR MOTOR INTERNAL PROTECTOR	TH1	THERMISTOR (COIL TEMP. SENSOR)
23S	THERMOSTAT	TH2	THERMISTOR (ROOM TEMP. SENSOR)
FMO	OUTDOOR FAN MOTOR	SW ASSY	SWITCH ASS'Y SW-KS2412W
49FO	OUTDOOR FAN MOTOR INTERNAL PROTECTOR	RCS	WIRELESS REMOTE CONTROL UNIT RCS-KS2412W
C1, C2	CAPACITOR		
F1	FUSE 250V, 3A	POW-KS1812B	CONTROLLER PCB ASS'Y
		F	FUSE 250V, 3A
INDOOR UNIT		V	VARISTOR
LM	LOUVER MOTOR	BD	BRIDGE DIODE
FMI	INDOOR FAN MOTOR	C01	CAPACITOR
49FI	INDOOR FAN MOTOR INTERNAL PROTECTOR	R1	RESISTOR
C	CAPACITOR	RY1, RY2, RY4	AUXILIARY RELAY

● Schematic Diagram

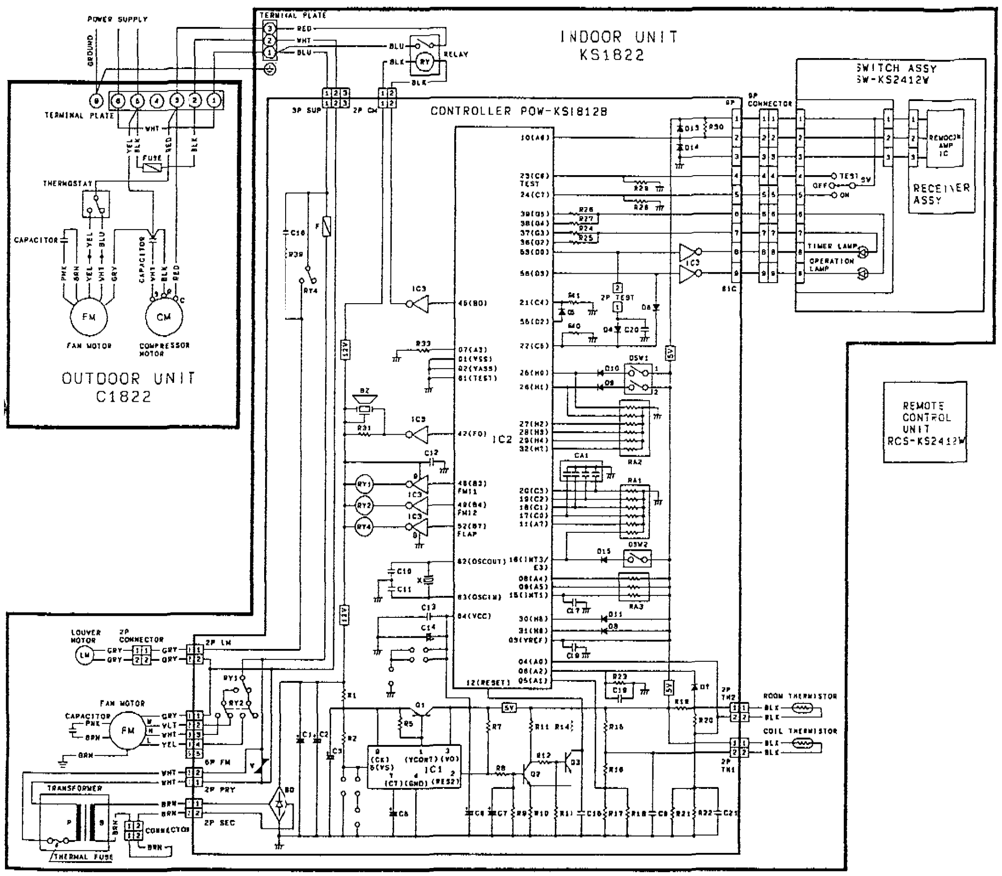
KS1822 / CL1822



Symbol	Description	Symbol	Description
OUTDOOR UNIT		INDOOR UNIT	
CH	CRANK CASE HEATER	LM	LOUVER MOTOR
CM	COMPRESSOR MOTOR	FMI	INDOOR FAN MOTOR
49C	COMPRESSOR MOTOR INTERNAL PROTECTOR	49FI	INDOOR FAN MOTOR INTERNAL PROTECTOR
FMO	OUTDOOR FAN MOTOR	C	CAPACITOR
49FO	OUTDOOR FAN MOTOR INTERNAL PROTECTOR	TR	TRANSFORMER
C1, C2	CAPACITOR	RY	RELAY
SSR	SOLID STATE RELAY	TH1	THERMISTOR (COIL TEMP. SENSOR)
TR2	TRANSFORMER	TH2	THERMISTOR (ROOM TEMP. SENSOR)
1X	RELAY	SW ASSY	SWITCH ASS'Y SW-KS2412W
THR	THERMISTOR (AIR SENSOR)	RCS	WIRELESS REMOTE CONTROL UNIT RCS-KS2412W
THC	THERMISTOR (COIL SENSOR)	POW-KS1812B	CONTROLLER PCB ASS'Y
52C	ELECTRO-MAGNETIC CONTACTOR	F	FUSE 250V, 3A
F1	FUSE 250V, 3A	V	VARISTOR
POW-183CL	CONTROLLER PCB ASS'Y	BD	BRIDGE DIODE
F2	FUSE 250V 5A	C01	CAPACITOR
V2	VARISTOR	R1	RESISTOR
		RY1, RY2, RY4	AUXILIARY RELAY

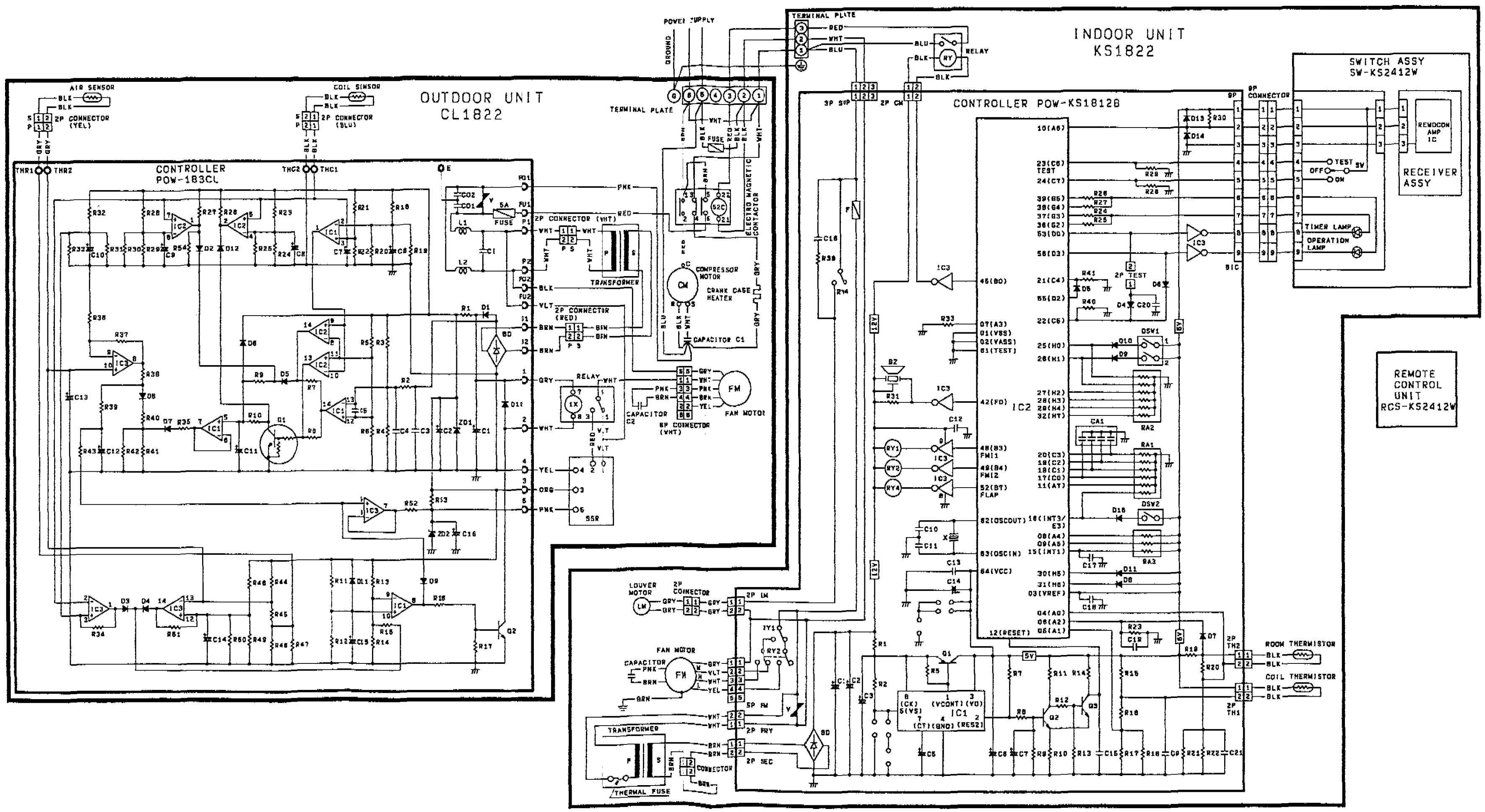
• Electric Wiring Diagram (PCB Ass'y)

KS1822 / C1822



- **Electric Wiring Diagram (PCB Ass'y)**

KS1822 / CL1822



POW-KS1812B

Symbol	Description	Specifications	
BZ101	BUZZER	PKM24SP3805	
C1	CAPACITOR	2200μF	25V
C2	CAPACITOR	1μF	50V
C3	CAPACITOR	10μF	50V
C5	CAPACITOR	1μF	50V
C6	CAPACITOR	220μF	16V
C7	CAPACITOR	1μF	50V
C9	CAPACITOR	0.1μF	50V
C10	CAPACITOR	0.00003μF	50V
C11	CAPACITOR	0.00003μF	50V
C12	CAPACITOR	0.022μF	50V
C13	CAPACITOR	0.1μF	50V
C14	CAPACITOR	100μF	10V
C15	CAPACITOR	0.022μF	50V
C16	CAPACITOR	0.01μF	250V
C17	CAPACITOR	0.0047μF	50V
C18	CAPACITOR	0.022μF	50V
C19	CAPACITOR	0.022μF	50V
C20	CAPACITOR	0.022μF	50V
C21	CAPACITOR	0.1μF	50V
CA1	CAPACITOR	0.0047μF-4	50V
D4	DIODE	DS446	
D5	DIODE	DS446	
D6	DIODE	DS446	
D7	DIODE	DS446	
D8	DIODE	DS446	
D9	DIODE	DS446	
D10	DIODE	DS446	
D11	DIODE	DS446	
D13	DIODE	DS446	
D14	DIODE	DS446	
D15	DIODE	DS446	
DSW1	SWITCH	SSGM 2P	
DSW2	SWITCH	JKS1120-0401	
DB	BRIDGE DIODE	DBA10C	
F	FUSE	250V, 3A	
IC1	IC	LA5693D	
IC2	IC	TMS73C161-C76577	
IC3	IC	LB1234	
Q1	TRANSISTOR	2SA1289	
Q2	TRANSISTOR	2SC536-E	
Q3	TRANSISTOR	2SC536-E	

POW-KS1812B

Symbol	Description	Specifications		
R1	RESISTOR (CARBON)	5.6Ω	±5%	1/2W
R2	RESISTOR (CARBON)	27KΩ	±5%	1/4W
R5	RESISTOR (CARBON)	390Ω	±5%	1/4W
R7	RESISTOR (CARBON)	1KΩ	±5%	1/4W
R8	RESISTOR (CARBON)	27KΩ	±5%	1/4W
R9	RESISTOR (CARBON)	22KΩ	±5%	1/4W
R10	RESISTOR (CARBON)	560Ω	±5%	1/4W
R11	RESISTOR (CARBON)	4.7KΩ	±5%	1/4W
R12	RESISTOR (CARBON)	5.6KΩ	±5%	1/4W
R13	RESISTOR (CARBON)	8.2KΩ	±5%	1/4W
R14	RESISTOR (CARBON)	4.7KΩ	±5%	1/4W
R15	RESISTOR (METAL)	12KΩ	±1%	1/4W
R16	RESISTOR (METAL)	750Ω	±1%	1/4W
R17	RESISTOR (METAL)	6.8KΩ	±1%	1/4W
R18	RESISTOR (METAL)	10KΩ	±1%	1/4W
R19	RESISTOR (METAL)	180Ω	±1%	1/4W
R20	RESISTOR (METAL)	15KΩ	±1%	1/4W
R21	RESISTOR (METAL)	6.2KΩ	±1%	1/4W
R22	RESISTOR (METAL)	11KΩ	±1%	1/4W
R23	RESISTOR (CARBON)	100KΩ	±5%	1/4W
R24	RESISTOR (CARBON)	270Ω	±5%	1/4W
R25	RESISTOR (CARBON)	270Ω	±5%	1/4W
R26	RESISTOR (CARBON)	270Ω	±5%	1/4W
R27	RESISTOR (CARBON)	270Ω	±5%	1/4W
R28	RESISTOR (CARBON)	5.6KΩ	±5%	1/4W
R29	RESISTOR (CARBON)	5.6KΩ	±5%	1/4W
R30	RESISTOR (CARBON)	100KΩ	±5%	1/4W
R31	RESISTOR (CARBON)	6.8KΩ	±5%	1/4W
R33	RESISTOR (CARBON)	56KΩ	±5%	1/4W
R39	RESISTOR (METAL)	100Ω	±1%	1W
R40	RESISTOR (CARBON)	56KΩ	±5%	1/4W
R41	RESISTOR (CARBON)	56KΩ	±5%	1/4W
RA1	RESISTOR	56KΩ-6	±5%	1/4W
RA2	RESISTOR	56KΩ-6	±5%	1/4W
RA3	RESISTOR	20KΩ-3	±5%	1/4W
RY1	RELAY	LZG-12HE		
RY2	RELAY	VB12TBU		
RY4	RELAY	LZG-12HE		
V	VARISTOR	SNR681KD14		
X	CRYSTAL	CSA-4MG		
3P SUP	CONNECTOR	2-173270-3		
5P FM	CONNECTOR	2-173270-5		
2P PRY	CONNECTOR	8-173270-2		
2P SEC	CONNECTOR	5273-02A		
2P TEST	CONNECTOR	NHK-P2T-N		
2P TH1	CONNECTOR	8-171825-2		
2P TH2	CONNECTOR	2-171825-2		
2P CM	CONNECTOR	5273-02A-BL		
2P LM	CONNECTOR	2-173270-2		

POW-183CL

Symbol	Description	Specifications		
BD	BRIDGE DIODE	DBA10C		
C1	CAPACITOR	470μF		50V
C2	CAPACITOR	22μF		25V
C3	CAPACITOR	0.047μF		50V
C4	CAPACITOR	0.047μF		50V
C5	CAPACITOR	0.022μF		50V
C6	CAPACITOR	22μF		25V
C7	CAPACITOR	22μF		25V
C8	CAPACITOR	22μF		25V
C9	CAPACITOR	22μF		25V
C10	CAPACITOR	22μF		25V
C11	CAPACITOR	470μF		16V
C12	CAPACITOR	100μF		16V
C13	CAPACITOR	22μF		25V
C14	CAPACITOR	22μF		25V
C15	CAPACITOR	100μF		16V
C16	CAPACITOR	22μF		25V
CI	CAPACITOR	0.22μF		630V
C01	CAPACITOR	0.033μF		630V
C02	CAPACITOR	0.033μF		630V
D1	DIODE	DSF10C		
D2 to D12	DIODE	DS446		
FUSE	FUSE	250V, 5A		
IC1	IC	NJM2902		
IC2	IC	LA6339		
IC3	IC	NJM2902		
Q1	TRANSISTOR	2SC 3400		
Q2	TRANSISTOR	2SC2274E		
L1	FILTER COIL	SN12–500		
L2	FILTER COIL	SN12–500		
R1	RESISTOR (OXIDE)	240Ω	±5%	2W
R2	RESISTOR (CARBON)	5.6KΩ	±5%	1/4W
R3	RESISTOR (CARBON)	18KΩ	±5%	1/4W
R4	RESISTOR (CARBON)	3.3KΩ	±5%	1/4W
R5	RESISTOR (CARBON)	22KΩ	±5%	1/4W
R6	RESISTOR (CARBON)	5.1KΩ	±5%	1/4W
R7	RESISTOR (CARBON)	22KΩ	±5%	1/4W
R8	RESISTOR (CARBON)	10KΩ	±5%	1/4W
R9	RESISTOR (CARBON)	910KΩ	±5%	1/4W
R10	RESISTOR (CARBON)	1MΩ	±5%	1/4W
R11	RESISTOR (CARBON)	150KΩ	±5%	1/4W
R12	RESISTOR (CARBON)	300KΩ	±5%	1/4W
R13	RESISTOR (CARBON)	5.6KΩ	±5%	1/4W

POW-183CL

Symbol	Description	Specifications		
R14	RESISTOR (CARBON)	7.5KΩ	±5%	1/4W
R15	RESISTOR (CARBON)	1.2KΩ	±5%	1/4W
R16	RESISTOR (CARBON)	7.5KΩ	±5%	1/4W
R17	RESISTOR (CARBON)	2.2KΩ	±1%	1/4W
R18	RESISTOR (METAL)	27KΩ	±1%	1/4W
R19	RESISTOR (METAL)	10KΩ	±1%	1/4W
R20	RESISTOR (CARBON)	56KΩ	±5%	1/4W
R21	RESISTOR (METAL)	27KΩ	±1%	1/4W
R22	RESISTOR (METAL)	100KΩ	±1%	1/4W
R23	RESISTOR (METAL)	27KΩ	±1%	1/4W
R24	RESISTOR (METAL)	8.2KΩ	±1%	1/4W
R25	RESISTOR (CARBON)	51KΩ	±5%	1/4W
R26	RESISTOR (CARBON)	13KΩ	±5%	1/4W
R27	RESISTOR (CARBON)	13KΩ	±5%	1/4W
R28	RESISTOR (METAL)	27KΩ	±1%	1/4W
R29	RESISTOR (METAL)	12KΩ	±1%	1/4W
R30	RESISTOR (CARBON)	68KΩ	±5%	1/4W
R31	RESISTOR (METAL)	1.5KΩ	±1%	1/4W
R32	RESISTOR (METAL)	27KΩ	±1%	1/4W
R33	RESISTOR (CARBON)	36KΩ	±5%	1/4W
R34	RESISTOR (CARBON)	120KΩ	±5%	1/4W
R35	RESISTOR (METAL)	510KΩ	±1%	1/4W
R36	RESISTOR (METAL)	12KΩ	±1%	1/4W
R37	RESISTOR (METAL)	36KΩ	±1%	1/4W
R38	RESISTOR (METAL)	1.8KΩ	±1%	1/4W
R39	RESISTOR (CARBON)	75KΩ	±5%	1/4W
R40	RESISTOR (METAL)	560Ω	±1%	1/4W
R41	RESISTOR (METAL)	300Ω	±1%	1/4W
R42				
R43	RESISTOR (CARBON)	100Ω	±5%	1/4W
R44	RESISTOR (METAL)	82KΩ	±1%	1/4W
R45				
R46				
R47	RESISTOR (CARBON)	10Ω	±5%	1/4W
R48	RESISTOR (METAL)	10KΩ	±1%	1/4W
R49	RESISTOR (METAL)	820Ω	±1%	1/4W
R50	RESISTOR (CARBON)	22KΩ	±5%	1/4W
R51	RESISTOR (CARBON)	150KΩ	±5%	1/4W
R52	RESISTOR (CARBON)	200Ω	±5%	1/4W
R53	RESISTOR (CARBON)	4.7KΩ	±5%	1/4W
R54	RESISTOR (CARBON)	75KΩ	±5%	1/4W
V	VARISTOR	SNR–A420K		
ZD1	ZENER DIODE	GZB–12C		
ZD2	ZENER DIODE	GZA5, 6Y		

6. TROUBLESHOOTING

6-1 Check before and after troubleshooting.

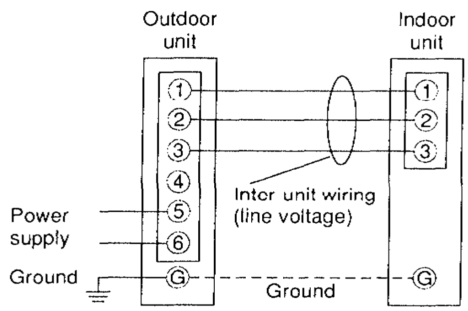
(1) Check power supply wiring.

- Check that power supply wires are correctly connected to terminals No. 5 and No. 6 on the 6P terminal plate in the outdoor unit.

(2) Check inter-unit wiring.

- Check that inter-unit wires are correctly connected to indoor unit from outdoor unit.

Power supply:
60Hz, single-phase, 230/208V



(3) Check power supply.

- Check that voltage is in specified range (±10% of the rating).
- Check that power is being supplied.

WARNING:

If the following troubleshooting must be done with power being supplied, be careful about any uninsulated live part that can cause ELECTRIC SHOCK.

(4) Check lead wires and connectors in indoor and outdoor units.

- Check that coating of lead wires is not damaged.
- Check that lead wires and connectors are connected firmly.
- Check that wiring is correct.

(5) Reference

(a) Condition of general cooling operation

ON/OFF operation button .... ON

COOL/FAN selector switch .... COOL

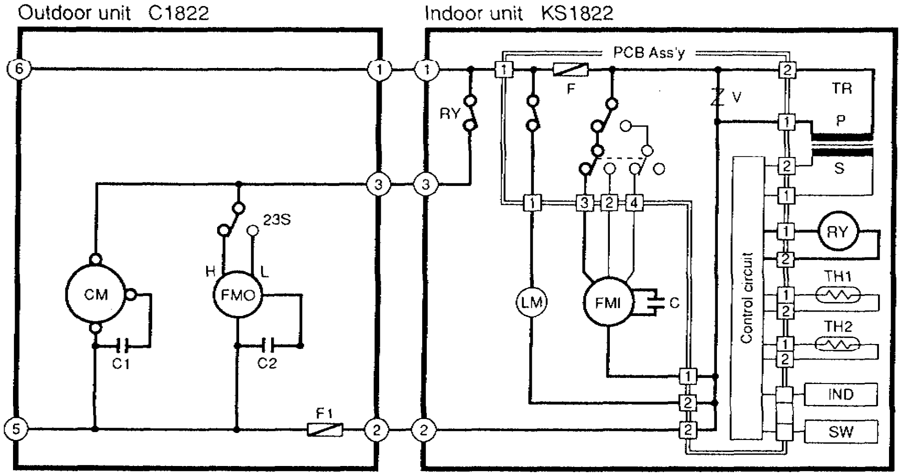
SWEEP button .... ON

Indoor fan speed .... HIGH

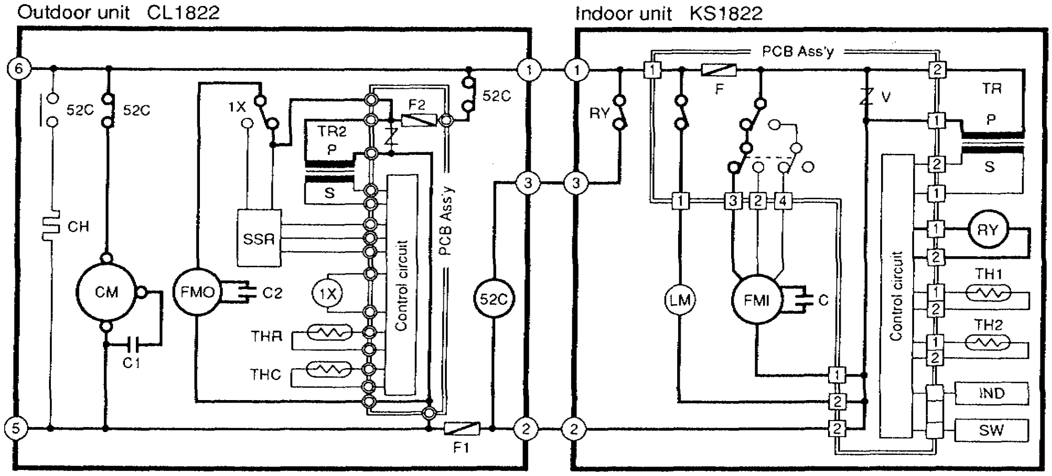
Thermo.. ON

Outdoor air temperature................................... above 79°F

Outdoor unit C1822 Indoor unit KS1822

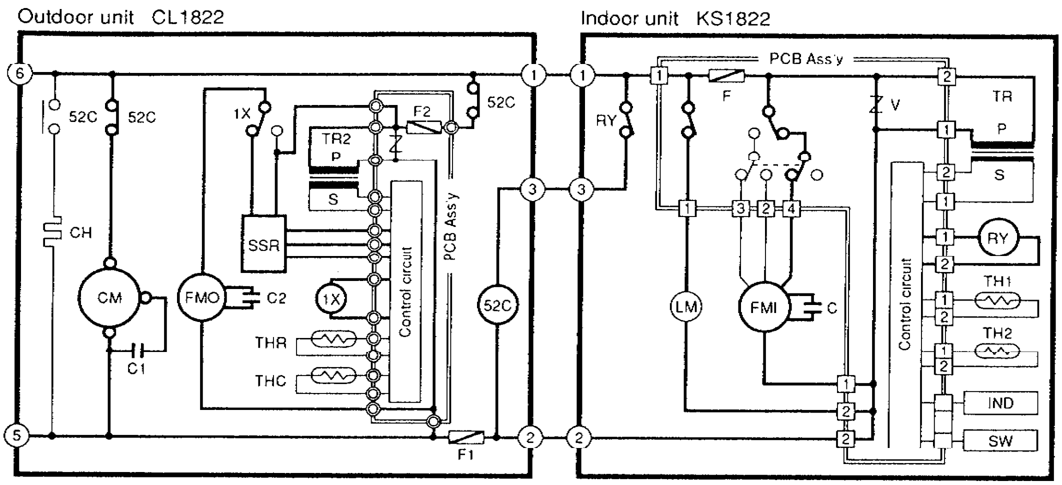


Outdoor unit CL1822 Indoor unit KS1822



(b) Condition of cooling operation under low ambient temperature

ON/OFF operation button	ON
COOL/FAN selector switch	COOL
SWEEP button	ON
Indoor fan speed	LOW
Thermo	ON
Outdoor air temperature	below 68°F



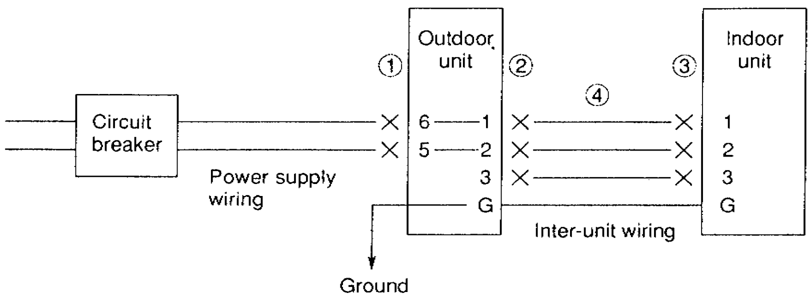
6-2 Air conditioner does not operate.

(1) Circuit breaker trips (or fuse blows).

(a) When circuit breaker is set to ON, it trips in a few moments (resetting is not possible).

- There is a possibility of ground fault.
- Measure insulation resistance.

  If resistance value is 1MΩ or less, insulation is defective ("NO").



*Set circuit breaker to OFF.

① Remove power supply wires from terminal plate in outdoor unit.
• Measure insulation resistance of power supply wires.
→ NO → Do rewiring.

② Remove inter-unit wires from terminal plate in indoor unit.
• Measure insulation resistance of indoor unit.
→ NO → Insulation of indoor unit is defective.
• Measure insulation resistance of electrical parts in indoor unit.

③ Remove inter-unit wires from terminal plate in outdoor unit.
• Measure insulation resistance of outdoor unit.
→ NO → Insulation of outdoor unit is defective.
• Measure insulation resistance of electrical parts in outdoor unit.

④ Measure insulation resistance of inter-unit wires.
→ NO → Do rewiring.

(b) Circuit breaker trips in several minutes after turning air conditioner ON.

- There is a possibility of short circuit.

• Check capacity of circuit breaker. Is capacity of circuit breaker suitable?

→

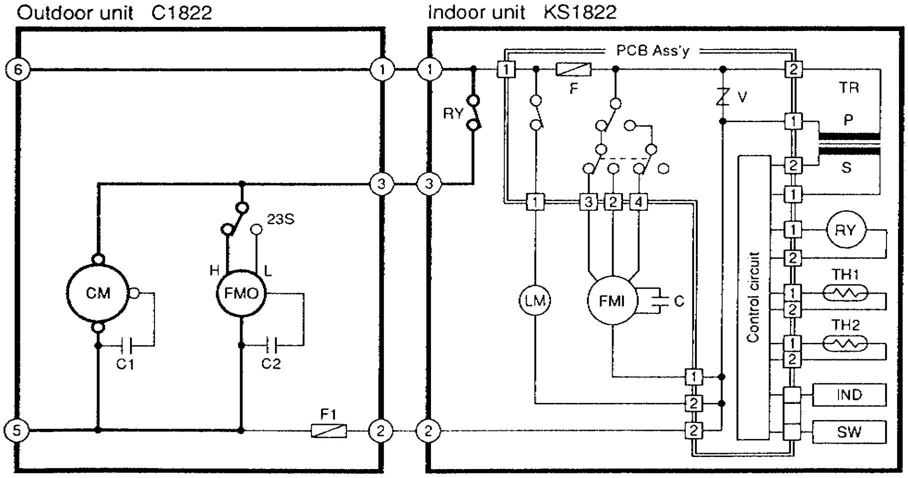
Replace it with suitable one (larger capacity).

• Measure resistance of compressor motor winding.

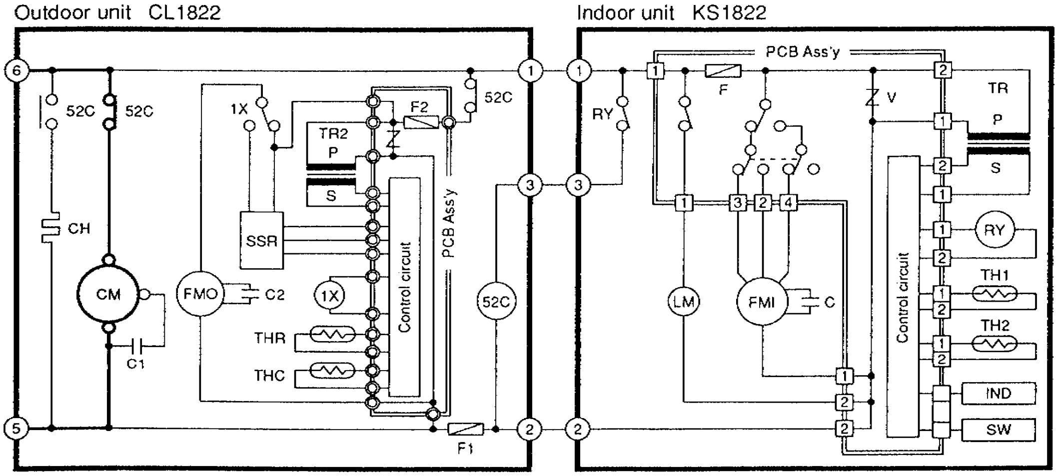
• Measure resistance of outdoor fan motor winding.

➡ Only C1822

Outdoor unit C1822 Indoor unit KS1822



Outdoor unit CL1822 Indoor unit KS1822



(2) Neither indoor unit nor outdoor unit runs.

(a) Power is not supplied.

- Check power supply.
  Is power being supplied to wall receptacle?

NO →
- Circuit breaker is tripped. → Reset breaker.
- Power failure. → Wait for recovery or contact power company.

(b) Check remote control unit.

- Try to run using another remote control unit.

Does not run. → Refer to Step (c) below.

OK ↓

First remote control unit is defective.

(c) Check OPERATION selector switch in indoor unit.

- Has OPERATION selector switch been set to ON position?

YES → IND LAMP Ass'y or PCB Ass'y in indoor unit is defective.

NO ↓

Set OPERATION selector switch to ON.

Does not run. ↓

Switch Ass'y or PCB Ass'y in indoor unit is defective.

(Neither indoor unit nor outdoor unit runs.) (cont'd)

(d) Check fuse in indoor unit.

- Check fuse in indoor unit for continuity.

If fuse blows,

↓

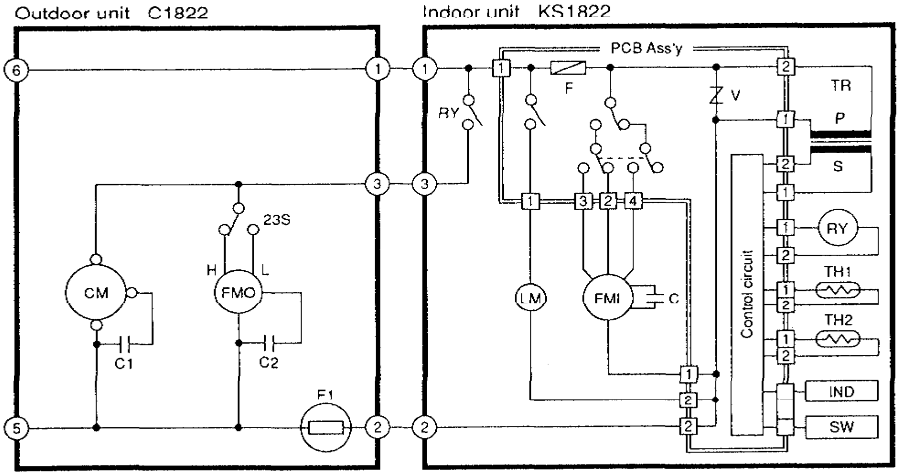
- Measure resistance of louver motor winding.

OK

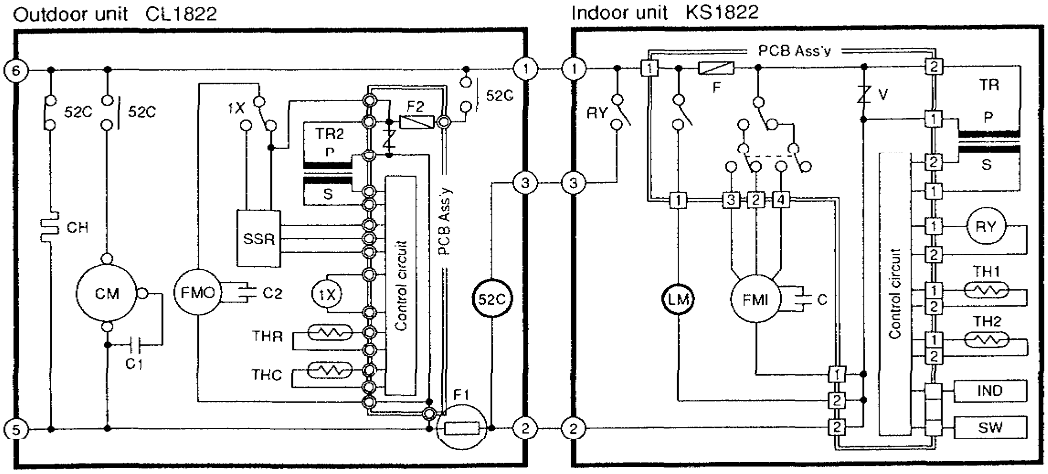
↓

- Measure coil resistance of electro-magnetic contactor. ➡ Only CL1822

Outdoor unit C1822 Indoor unit KS1822

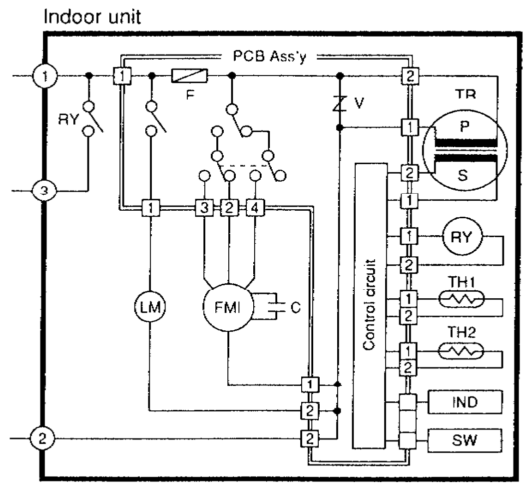


Outdoor unit CL1822 Indoor unit KS1822



(e) Check transformer in indoor unit.

- Measure resistance of primary and secondary winding.



(f) Check fuse on PCB Ass'y in indoor unit.

- Check fuse on PCB Ass'y in indoor unit for continuity.

If fuse blows,

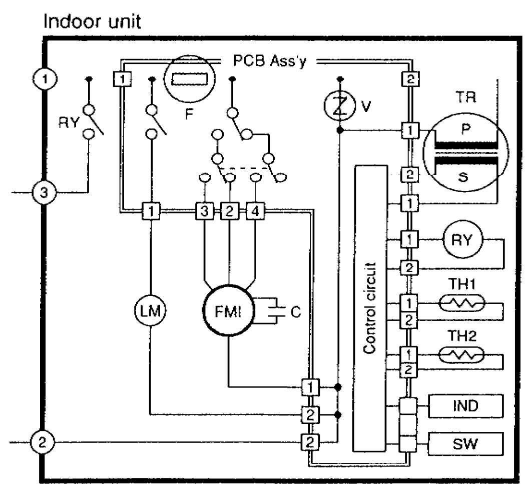
↓

- Measure resistance of primary winding of transformer.

OK

↓

- Measure resistance of indoor fan motor winding.



(3) Only outdoor unit does not run.

(a) Check COOL/FAN selector switch of remote control unit.

- Is COOL/FAN selector switch set to COOL?

NO → Set to COOL.

(b) Outdoor unit does not run when air conditioner is in following conditions.

- During thermo OFF (when the room temperature is below the setting temperature).
- During freeze prevention (for at least 6 minutes).

• Check setting temperature

Try to lower setting temperature by temperature setting button COOLER.

↓ Outdoor unit does not run.

Is room temperature too low?

↓ NO

- Try to run using another remote control unit.

↓ OK

First remote control unit is defective.
(Room sensor in remote control unit is defective.)

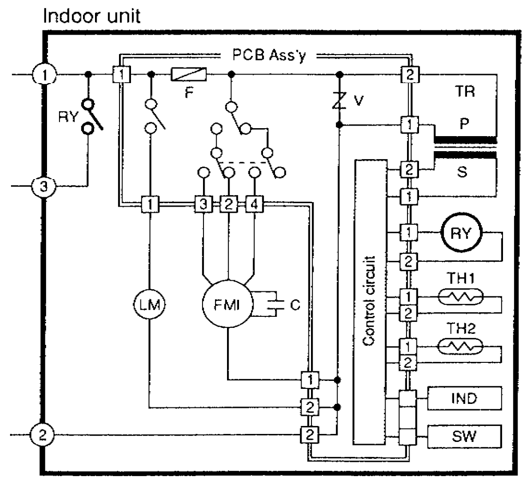
(Only outdoor unit does not run.) (cont'd)

(c) Check relay (RY) in indoor unit.

• Measure coil resistance of relay (RY).

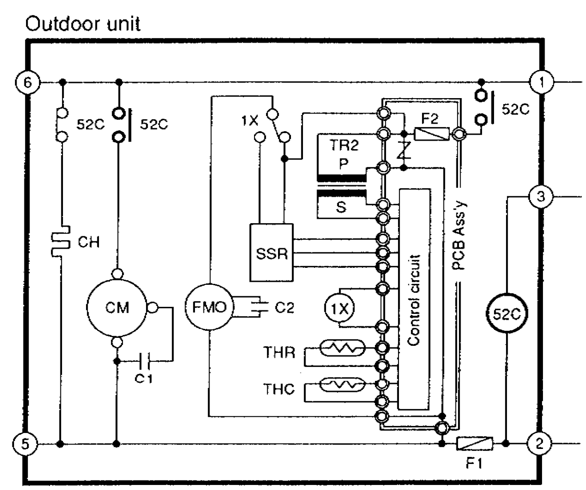
↓ OK

PCB Ass'y is defective.



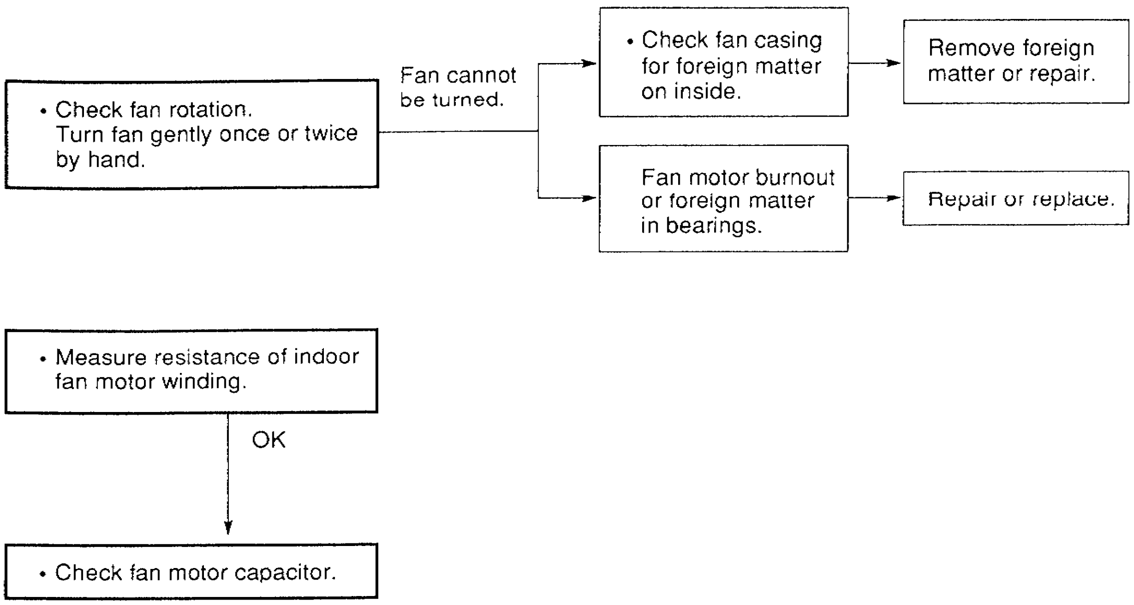
(d) Check electro-magnetic contactor (CL1822 only).

• Measure coil resistance of electro-magnetic contactor.

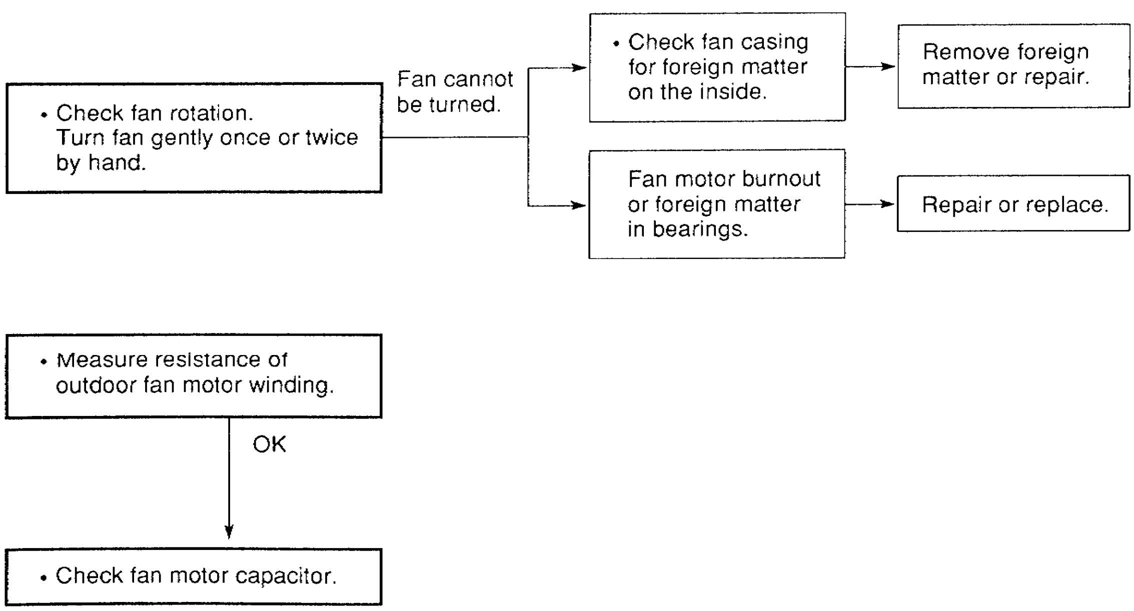


6-3 A particular component of air conditioner does not operate.

(1) Only indoor fan does not run.



(2) Only outdoor fan does not run.



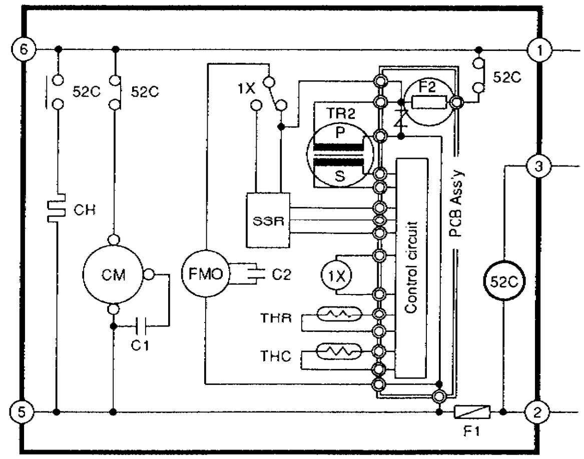
(3) Only outdoor fan does not run for CL1822.

• Check fuse on PCB Ass'y in outdoor unit for continuity.

If fuse blows,

• Measure resistance of primary winding of transformer.

Outdoor unit



(4) Only compressor does not run.

• Check compressor motor capacitor.

OK

• Measure resistance of compressor motor winding.

Wait for 30 minutes until compressor cools.

Compressor runs.

Compressor internal thermal protector is operated.

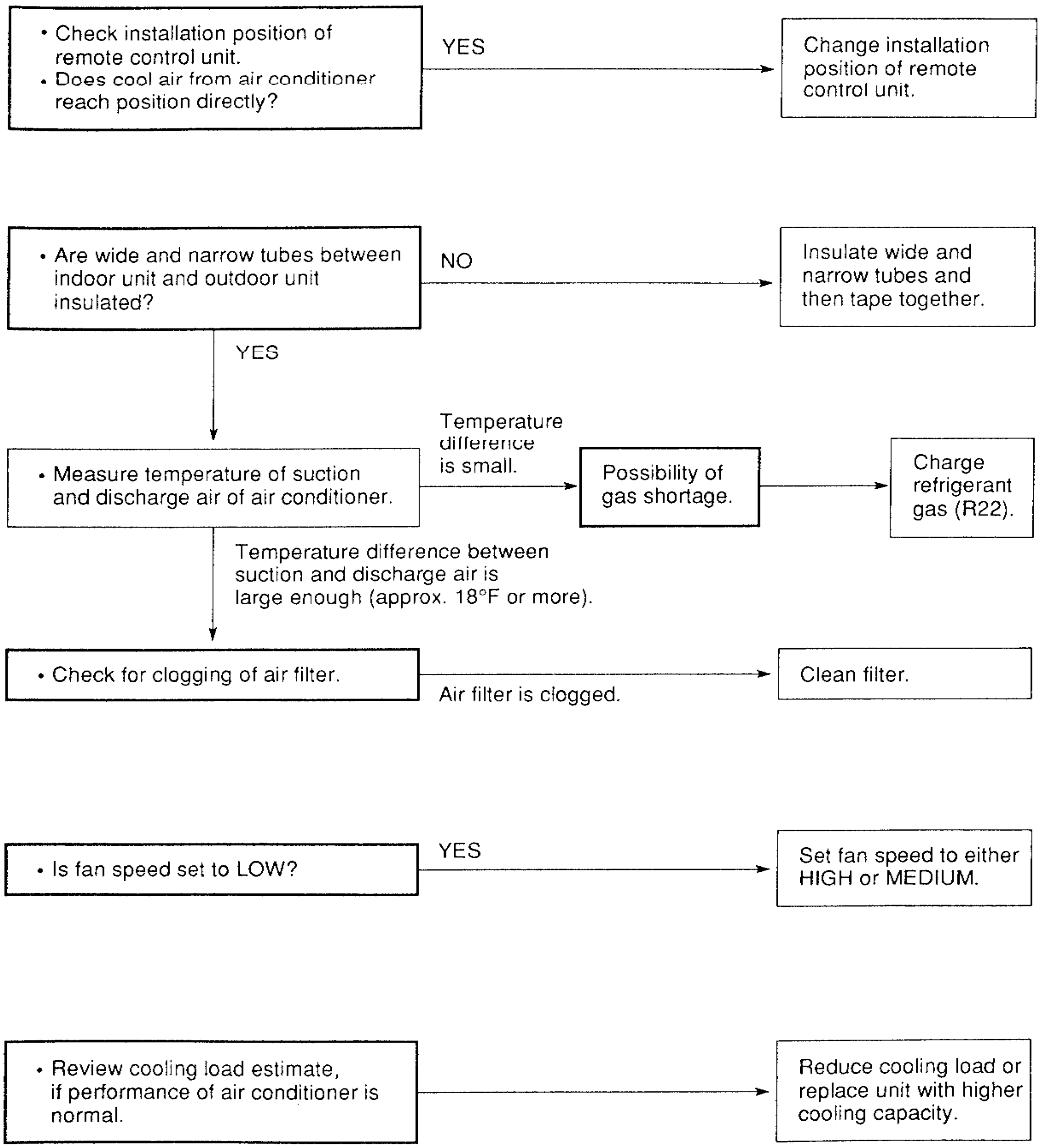
• Check power supply voltage. Is voltage abnormally low?

NO

• Is outdoor heat exchanger coil dirty or are there obstacles near air suction inlet?

6-4 Air conditioner operates, but abnormalities occur.

(1) Poor Cooling



(2) Excessive Cooling

Check	Result	Action
• Is set temperature suitable?	NO →	Set temperature to higher value using temperature setting button WARMER.
• Is remote control unit installed at place where it can detect room temperature properly?	NO →	Change installation position of remote control unit.

6-5 Indoor (heat exchanger) coil temperature sensor (TH1) is defective.

(1) Open

Even though the air conditioner does not thermo OFF, compressor and outdoor fan repeat ON for 10 minutes and OFF for 6 minutes.

(2) Shortage

When dehumidified water freezes in the indoor coil, the freeze prevention function does not work.

7. CHECKING ELECTRICAL COMPONENTS

7-1 Measurement of Insulation Resistance

- The insulation is in good condition if the resistance exceeds 1 MΩ.

(1) Power Supply Wires

Clamp the grounded wire of the power supply wires with the lead clip of the insulation resistance tester and measure the resistance by placing a probe on either of the power wires. (Fig. 1)

Then measure the resistance between the grounded wire and the other power wires. (Fig. 1)

(2) Indoor Unit

Clamp an aluminum plate fin or copper tube with the lead clip of the insulation resistance tester and measure the resistance by placing a probe on ①, and then ② on the terminal plate. (Fig. 2)

(3) Outdoor Unit

Clamp a metallic part of the unit with the lead clip of the insulation resistance tester and measure the resistance by placing a probe on ⑤, and then ⑥ on the terminal plate. (Fig. 2)

(4) Measurement of Insulation Resistance for Electrical Parts

Disconnect the lead wires of the desired electric part from terminal plate, PCB Ass'y, capacitor, etc. Similarly disconnect the connector. Then measure the insulation resistance. (Figs. 1 to 4)

Refer to Electric Wiring Diagram.

Note: If the probe cannot enter the poles because the hole is too narrow then use a probe with a thinner pin.

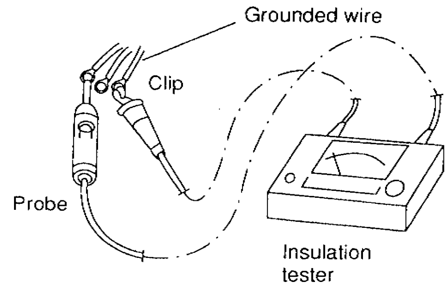


Fig. 1

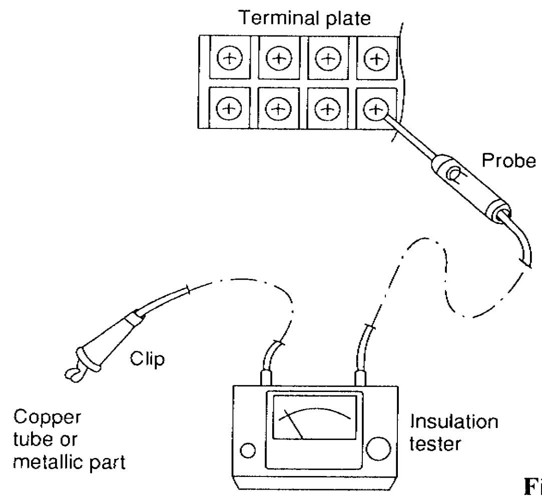


Fig. 2

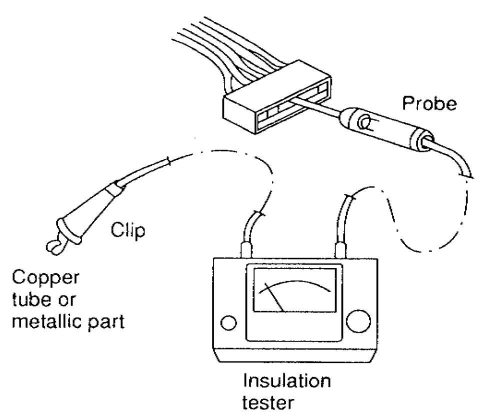


Fig. 3

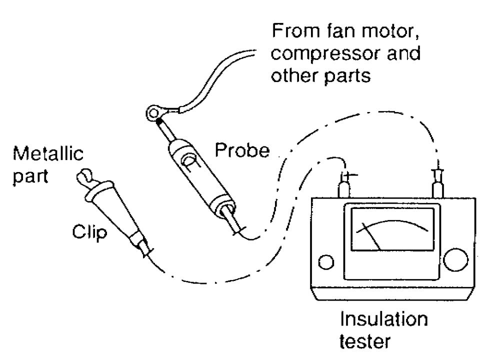


Fig. 4

7-2 Checking Continuity of Fuse on PCB Ass'y

- Check for continuity using a multimeter as shown in Fig. 5.

Note:

Method Used to Replace Fuse on PCB Ass'y

1. Remove the PCB Ass'y from the electrical component box.
2. Pull out the fuse at the metal clasp using pliers while heating the soldered leads on the back side of the PCB Ass'y with a soldering iron (30W or 60W). (Fig. 6)
3. Remove the fuse ends one by one. For replacement, insert a fuse of the same rating and solder it. (Allow time to radiate heat during soldering so that the fuse does not melt.)

CAUTION: **When replacing the fuse, be sure not to break down the varistor.**

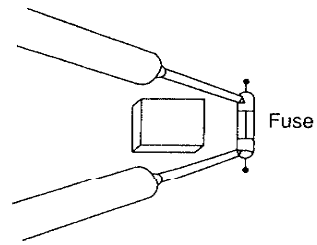


Fig. 5

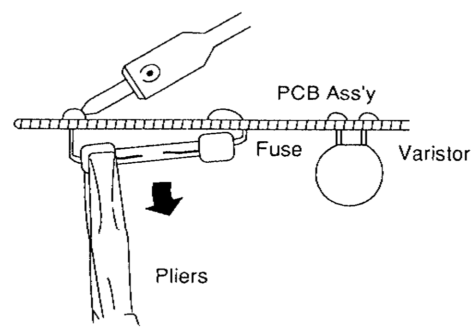


Fig. 6

7-3 Checking Motor Capacitor

Remove the lead wires from the capacitor terminals, and then place a probe on the capacitor terminals as shown in Fig. 7. Observe the deflection of the pointer, setting the resistance measuring range of the multimeter to the maximum value.

The capacitor is "good" if the pointer bounces to a great extent and then gradually returns to its original position.

The range of deflection and deflection time differ according to the capacity of the capacitor.

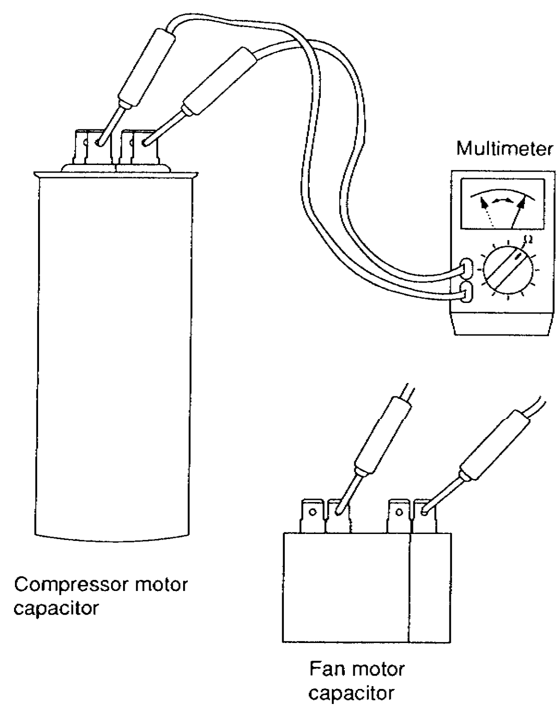


Fig. 7

7-4 Appearance of Electrical Parts

(1) Relay

DFU12D1-F (M)

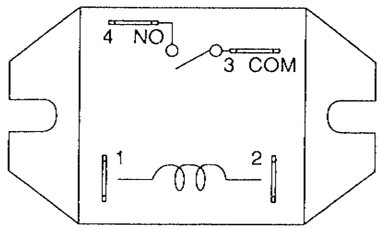


Fig. 8

(2) Thermostat

MQT5S 27YZ

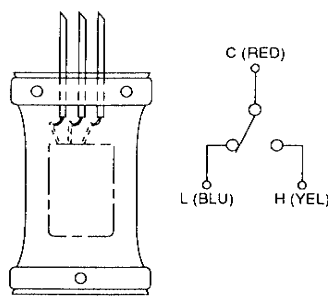


Fig. 9

(3) Electro-Magnetic Contactor

CLK-16E3-21

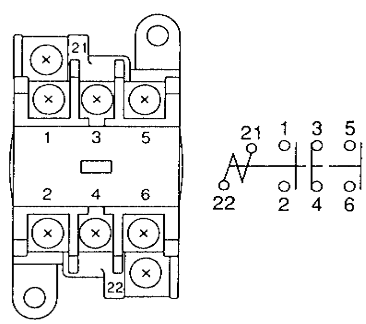


Fig. 10

(4) Relay

MY2F-T1-USTS

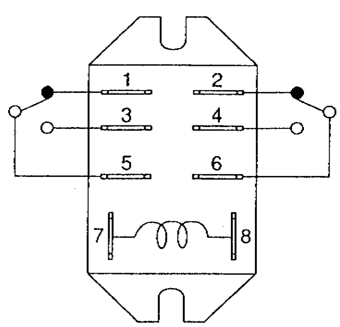


Fig. 11

(4) SSR (solid state relay)

G3L-205TL-TS1

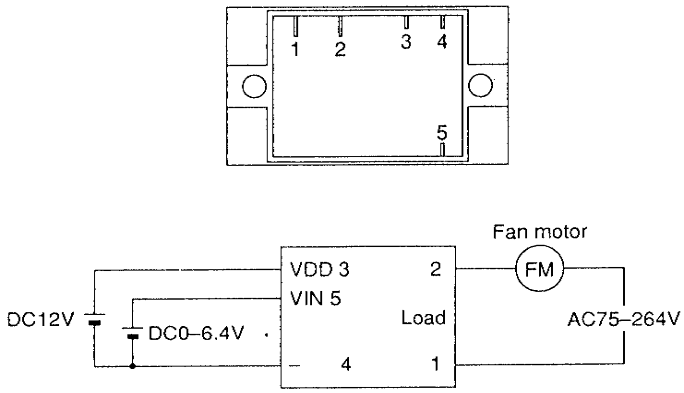


Fig. 12